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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No.	KLR:7146.044
First Inventor or Application Identifier	Larry A. Westerman
Title	Interactive Virtual Area Browser
Express Mail Label No.	EL399605913US

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. [X] * Fee Transmittal Form *(e.g., PTO/SB/17)*
(Submit an original and a duplicate for fee processing)

2. [X] Specification [Total Pages 17]
(preferred arrangement set forth below)
- Descriptive title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to Microfiche Appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (*if filed*)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

3. [X] Drawing(s) *(35 U.S.C. 113)* [Total Sheets 3]

4. Oath or Declaration [Total Pages 2]
a. [X] Newly executed (original or copy)
b. [ ] Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 16 completed)
i. [ ] DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

NOTE FOR ITEMS 1 & 13: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

5. [ ] Microfiche Computer Program (*Appendix*)

6. Nucleotide and/or Amino Acid Sequence Submission (*if applicable, all necessary*)
a. [ ] Computer Readable Copy
b. [ ] Paper Copy (identical to computer copy)
c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. [X] Assignment Papers (cover sheet & document(s))
8. [X] 37 C.F.R.§3.73(b) Statement [ ] Power of
(when there is an assignee) [X] Attorney
9. [ ] English Translation Document (*if applicable*)
10. [ ] Information Disclosure Statement (IDS)/PTO-1449 [ ] Copies of IDS Citations
11. [ ] Preliminary Amendment
12. [X] Return Receipt Postcard (MPEP 503)
(*Should be specifically itemized*)
13. [ ] * Small Entity Statement(s) (PTO/SB/09-12) [ ] Statement filed in prior application, Status still proper and desired
14. [ ] Certified Copy of Priority Document(s) (*if foreign priority is claimed*)
15. [X] Other: Check in the amt of $1,490

16. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in a preliminary amendment:*
[ ] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application No: _____ / _____
Prior application information: Examiner _____ Group / Art Unit: _____
For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation <u>can only</u> be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

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INTERACTIVE VIRTUAL AREA BROWSER

BACKGROUND OF THE INVENTION

5   The present invention relates to a user interface for a computer and, more particularly, to a graphical user interface that readily accommodates user interaction in selecting, scrolling, and rescaling graphical representations of data displayed by a computer.

A graphical user interface (GUI) permits a computer user to communicate
10   with application programs running on the computer by manipulating "objects" on a virtual desktop. An object on the desktop is a graphical representation of data in a file. All of the objects in a file which are potentially viewable by the user make up a virtual information area which is a topological representation of the data space viewable by the user. When the objects of a file are displayed at a
15   particular scale, the physical area required to display the information area may exceed the physical size of the window of the computer's display through which the user can view the information area. In this case, the computer processes a subset of the data and renders a region of the virtual information area that fits the available window. The remainder of the information area is "located" outside the
20   window and out of the user's view. To permit the user to view and work with all regions of interest in the virtual information area, the user interface includes a scrolling control that facilitates processing new subsets of data representing other regions of the information area for display in the window. Scrolling effectively repositions the virtual information area under the window. Typically, GUIs also
25   include a zoom control which facilitates changing the scale of objects displayed in the window. Zooming "in" permits the user to examine details of an object which are not clearly visible when displayed at a certain scale. Zooming "out" facilitates more convenient examination of the relationship of larger objects. User interfaces may also permit the user to select a part of the displayed portion of the

information area and then change the size of the selected region preparatory to taking some action involving the selected objects, such as zooming.

Heretofore, graphical user interfaces have required the user to differentiate between zooming, scrolling, and other interactions with the information area by

5   making a global modal change in the interaction medium to accomplish each individual interaction. To scroll, the user typically moves a mouse controlled cursor to a scroll bar icon at an edge of the display area. The scroll bar may provide the user with a choice of actuating a scrolling control or dragging a scroll box to cause the computer to move the window horizontally or vertically over the

10 information area.   Selection of a different control (a menu followed by area selection or a zoom box) is required if the user wishes to zoom in or out. For graphics programs, such as computer aided design (CAD), where information areas are large and users frequently desire to display new regions of the information area and zoom in or out to examine details or relationships of objects,

15 the frequent movement of the cursor between the displayed objects and the various interface controls can be awkward, time consuming, and frustrating.

Perry, METHOD AND APPARATUS FOR COMBINING A ZOOM FUNCTION IN SCROLL BAR SLIDES, U.S. Patent No. 5,583,225; illustrates a user interface having scroll bars for horizontal and vertical movement of the

20 display window relative to the information area. The scroll bar includes a scroll box which can be dragged by a mouse controlled cursor to move the window. The relative lengths of the scroll box and the scroll bar represent the relative proportions of the window and the information area. A zoom control is incorporated into the scroll bar. By selecting the zoom control with the cursor, the

25 user can resize the scroll box and proportionally change the size of the window relative to the size of the information area. The effect of displaying a greater or lesser region of the information area is to magnify or minify the objects displayed in the window. While placing the zoom and scroll controls in close proximity reduces the required cursor movement, global modal changes through multiple

controls are required to indirectly manipulate the window and its contents.

What is desired, therefore, is a computer implemented user interface permitting a user to define a graphic region of interest in a virtual information area and to change the scale of displayed objects. The user interface should also

5   permit resizing and repositioning the selected region relative to the information area without the necessity of searching out and actuating remotely located controls to make global modal changes.

SUMMARY OF THE INVENTION

10   The present invention overcomes the aforementioned drawbacks of the prior art by providing, in a first aspect, a computer implemented graphical user interface that includes a manipulator enabling the alteration of a scale of an object displayed by a computer. A dimension of a graphic representation of an active region of data on the computer is altered when the dimension of the active area is

15   approximately equal to a limit. The interface allows the user to zoom in or out of an on-screen graphic to examine details or relationships between larger objects by dragging a handle of an active area when the size of the active area graphic is at a preset maximum or minimum limit.

In a second aspect, the present invention provides a computer

20   implemented graphical user interface that includes a manipulator enabling a user to alter a size of an active region of an information area on a computer. The alteration is performed by a first user selected interaction with a graphic representation of the active region and to alter the scale of an object displayed by the computer by a second user selected interaction with the graphic

25   representation. By interaction of an on-screen manipulator with the graphic representation of an active region, the user can alter the size of the active region by dragging an edge of the graphic of the region with a first manipulator selection and cause the scale of objects displayed in the active region to change by continuing to drag with the manipulator after a second selection with the controls

-3-

for the manipulator.

The present invention also provides a method of processing data on a computer that includes the steps of selecting an active region from a data area on the computer; representing the active region as a graphic on a display; altering

5   the portion of the data area included in the active region by altering the size of the graphic between a plurality of limits by interaction of a cursor and the graphic; and altering the data included in the active region to change a scale of an object visible on the display by interaction of the cursor with the graphic having a size approximately equal to one of the limits. In an alternative method, the scale of

10   displayed objects is changed by dragging the active area after a second user directed cursor selection.

The present invention also provides a computer implemented user interface and data processing method permitting a user to define a region of interest in a virtual information area and to directly manipulate the graphic

15   representation of the selected region without making global modal changes with remotely located controls. Using the interface and method a computer user can easily and efficiently change the scale of displayed objects and resize and reposition the selected region relative to a larger information area.

The foregoing and other objectives, features and advantages of the

20   invention will be more readily understood upon consideration of the following detailed description of the invention, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

25   FIG. 1 is a block diagram of the hardware of an exemplary computer
             system.

         FIG. 2 illustrates an exemplary information area on a computer, a window
             for viewing the information area and an active region selected from
             the information area visible in the window.

FIG 3 illustrates an active region moved relative to the exemplary information area of FIG. 2.

FIG. 4 illustrates a resized active region for the exemplary information area of FIG. 2.

5   FIG. 5 illustrates rescaled objects in an active region of a section of the rescaled exemplary information area of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates the hardware of a typical personal computer system 2

10   upon which the graphical user interface of the present invention might be implemented. The hardware includes a central processing unit (CPU) 4 which may be a microprocessor. The CPU 4 is attached to a system bus 6. Also attached to the system bus is random access memory (RAM) 8, read only memory (ROM) 10, an input/output (I/O) adapter 12, and a user interface adapter 14. The

15   RAM 8 provides storage for application programs and data while the ROM 10 contains the basic input-output system (BIOS), including the boot code. The I/O adapter 12 is connected to one or more direct access devices including a disk drive 16 that provides mass storage for programs and data. The I/O adapter 14 may support one of several input-output device standards such as the Integrated

20   Device Electronics (IDE) or Small Computer System Interface (SCSI) standards. The user interface adapter 14 provides the interface for a keyboard 16, mouse 18, speaker 20, microphone 22, or other input-output devices with which the user can interact with the computer system. A display 24 such as a cathode ray tube (CRT) or liquid crystal display (LCD) monitor is also connected to the system

25   bus 6 through a display adapter 26. A communications adapter 28 may also be included to permit the computer to be connected to a computer network. The computer may, likewise, be any electronic device. as for example, a handheld device

A user interacts with the computer through programs running on the

computer's hardware. User interaction may be facilitated by a graphical user interface (GUI) providing for a virtual desktop and permitting the user to communicate with the program by interaction with virtual controls and manipulation of graphical representations of the data in the files of the program or

5   objects on the desktop. Referring to FIG. 2, a virtual desktop includes a window or "on-screen" display area 30 through which the user can view and manipulate objects in a virtual information area 32. One or more windows 30 may be simultaneously visible on the computer's display. The virtual information area 32 is the topological representation of a file's total data space potentially viewable by

10   the user. At a particular level of magnification, the physical "area" occupied by the objects of the information area 32 may be greater than the physical dimensions of the window 30. For example, a particular file may contain the information area 32 describing a map, as illustrated in FIG. 2; a drawing, or text document which when viewed at a particular scale would occupy an area

15   physically larger than the dimensions of the window 30. In other words, the data forming the image viewable in the window 30 is a subset of the total data making up the objects in the file or a region of the information area 32. Part of the information area is "located" off the display and out of view of the user.

To make effective use of the computer, the user should be able to move

20   the window relative to the information area so that all regions of the virtual information area are visible and available for the object manipulation provided by the program Movement of the window relative to the information area is accomplished by scrolling which effectively moves the information area under the window Likewise, the user may wish to zoom in or out, effectively moving closer

25   or further away from the information area, to view different levels of detail. Scrolling and zooming are actions which are often performed contemporaneously, but controlled by separate, remotely located controls making rapid switching between modes difficult and frustrating. The present inventors realized that it would be easier to use the computer if scrolling and zooming could be

accomplished by directly altering the position and size of an active portion of the information area displayed in the window with a simple manipulator.

Continuing to refer to FIG. 2, in the GUI of the preferred embodiment of the present invention the user can select an active region 34 of the information

5   area 32 displayed in the window 30 readying the objects within the active region for some additional operation. To select the active area 34 the cursor 36 is moved to a starting location in the window 30 by manipulating a mouse or other pointing device. With the cursor 36 at a starting location, the user can depress a mouse button or other selection control and drag the cursor 36 to a second

10   location. The computer system displays a rectangle bounding the active region 34 with corners at the starting and second locations, as designated the user. Objects inside the active region 34 are selected for some operation   The active region may also be an existing "window" of the GUI which is selected for use in any manner.

15   To facilitate interaction with the data, the user may desire to move the active region 34 relative to the information area 32 so that a different region of the information area 32 is active and viewable in the window 30. Referring to FIG. 3, to do so, the user positions the cursor within the active area 34 and activates a control (e.g., depresses a mouse button). The cursor preferably changes shape

20   to provide feedback to the user concerning the change in function. The user can then move the modified cursor or manipulator 40 to move the active area 34 relative to the information area 32.

The user may also desire to alter the size of the active area 34 to change the size of the region of the information area which is viewable in the window and

25   the number of objects active for operations. To resize the active area, the cursor is positioned on the periphery of the active area 44 or at a "handle" 46 at the corner of the active area 44, as illustrated in FIG. 4. A cursor control, such as a mouse button, is used change modes causing the cursor to change shape providing user feedback concerning the change in function. The user can now

change the size of the active area 44 by dragging the handle 46 or periphery with the manipulator 48. Changing the size of the active area, alters the quantity of data included in the subset of data being processed for some additional operation. Alternatively, the size of the active area 44 may be changed by handle

5 located at other locations, as desired.

Zooming in to magnify or zooming out minify the visible objects is an operation frequently desired in connection with movement of the display area relative to the information area. Functionally, zooming is related to changes in the size of the active area. When the size of the active region reaches the limits of

10 the on-screen display, zooming is required to further increase or decrease the size of the active region. Referring to FIG. 5, the user interface of the present invention facilitates zooming of displayed objects by manipulating the graphic representation of the active area 50. With the cursor on a handle 52 at the corner of the active area 50, the user can switch to the zoom function by activating a

15 second cursor control or by continuing to drag the handle 52 after the active area 50 has reached a preset maximum or minimum dimensional limit. Zooming, in effect, changes the scale of presentation of displayed objects. When the second cursor control is activated or the active area 50 has reached a size limit, the cursor again preferably changes shape indicating the change of function.

20 Further, movement of the manipulator 54 will cause the computer to process new subsets of the data from the information area causing the objects in the window 30 to be magnified ("zoom in") or minified ("zoom out").

In addition to the above described application to two-dimensional data presentation, the interface is useful for one-dimensional or three-dimensional

25 graphic displays For example, an active area on a ruler could be moved, resized, or rescaled (changing the gradations on the ruler) by application of the interface of the present invention. The interface allows a computer user to select a part of the available graphical representation of the virtual information area and directly manipulate the position, size and magnification applied to that area, avoiding the

need to search for and select a number of controls to perform functionally related actions.

All the references cited herein are incorporated by reference.

5   The terms and expressions that have been employed in the foregoing specification are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the invention is defined and limited only by the claims that follow

What is claimed is:

1. A computer implemented graphical user interface comprising a manipulator enabling alteration of a scale of an object displayed by a computer by altering a dimension of a graphic representation of an active region of data on said computer, said dimension being approximately equal to a limit.

2. The graphical user interface of claim 1 wherein alteration of said dimension of said graphic representation when said dimension is approximately equal to a maximum causes said scale of said object to be minified.

3. The graphical user interface of claim 1 wherein alteration of said dimension of said graphic representation when said dimension is approximately equal to a minimum causes said scale of said object to be magnified.

4. The graphical user interface of claim 1 wherein said dimension of said graphic representation is a diagonal of a rectangle.

5. The computer implemented graphical user interface of claim 1 wherein said computer on which said interface is implemented is a personal computer.

6. The computer implemented graphical user interface of claim 1 wherein said computer on which said interface is implemented is a handheld electronic device.

7. A computer implemented graphical user interface comprising a manipulator enabling a user of a computer to alter a size of an active region of an information area on said computer between a plurality of limits by interaction of said manipulator with a dimension of a graphic representation of said active region and to alter a scale of an object displayed by said computer by interaction of said

-10-

manipulator and said graphic representation having said dimension approximately equal to a said limit.

8. The graphical user interface of claim 7 wherein said scale of said displayed object is minified by interaction of said manipulator and said graphic representation when said dimension is at a maximum limit.

9. The graphical user interface of claim 7 wherein said scale of said displayed object is magnified by interaction of said manipulator and said graphic representation when said dimension is at a minimum limit.

10. The manipulator of claim 7 further enabling a user to move said active region relative to said information area by a second interaction of said manipulator and said graphic representation.

11. The manipulator of claim 7 wherein said interaction of said manipulator and said graphic representation is accomplished with a mouse.

12. A computer implemented graphical user interface comprising a manipulator enabling a user to alter a size of an active region of an information area on said computer by a first user selected interaction with a graphic representation of said active region and to alter a scale of an object displayed by said computer by a second user selected interaction with said graphic representation.

13. The graphical user interface of claim 12 further enabling a user to move said active region relative to said information area by a third user selected interaction of said manipulator and said graphic representation.

14. The graphical user interface of claim 12 wherein said first user selected interaction and said second user selected interaction of said manipulator and said active area are accomplished with a mouse.

15. The graphical user interface of claim 12 wherein said scale of said object is altered to zoom in on said object when said second user selected interaction would decrease said size of said graphic representation.

16. The graphical user interface of claim 12 wherein said scale of said object is altered to zoom out on said object when said second user selected interaction would increase said size of said graphic representation.

17. A computer implemented graphical user interface comprising:
    (a) graphic representation of an active region of an information area;
    (b) a positioning tool enabling said user to move said active region relative to said information area by a first user selected interaction of said positioning tool with said graphic representation;
    (c) a sizing tool enabling said user to alter a size of said active region between a plurality of limits by a second user selected interaction of said sizing tool with said graphic representation; and
    (d) a scaling tool enabling said user to alter a scale of an object displayed by said computer by interaction of said scaling tool with said graphical representation having a size approximately equaling a said limit.

18. The graphical user interface of claim 17 wherein said scale of said object is altered to zoom in when said interaction of said scaling tool is to decrease said size of said graphical representation when said size limit is approximately a minimum.

19.   The graphical user interface of claim 17 wherein said scale of said object is altered to zoom out when said interaction of said scaling tool is to increase said size of said graphical representation when said size limit is approximately a maximum.

20.   The graphical user interface of claim 17 wherein said first user selected interaction and said second user selected interaction are accomplished with a mouse.

21.   The graphical user interface of claim 17 wherein said interaction of said scaling tool with said graphical representation is accomplished with a computer mouse.

22.   A computer implemented graphical user interface comprising:
       (a) a graphic representation of an active region of an information area;
       (b) a positioning tool enabling said user to move said active region relative to said information area by a first user selected interaction of said positioning tool with said graphic representation;
       (c) a sizing tool enabling said user to alter a size of said active region by a second user selected interaction of said sizing tool with said graphic representation; and
       (d) a scaling tool enabling said user to alter a scale of an object displayed by said computer by a third user selected interaction of said scaling tool with said graphical representation.

23.   The graphical user interface of claim 22 where said graphic representation of said active region has a rectangular shape.

24.   The graphical user interface of claim 22 wherein selection of said positioning tool, said sizing tool and said scaling tool are accomplished with a computer mouse.

25. The graphical user interface of claim 22 wherein said first user selected interaction, said second user selected interaction and said third user selected interaction are accomplished with a mouse.

26. The graphical user interface of claim 22 wherein alteration of said scale of said object to zoom out is accomplished by said third user selected interaction to increase a dimension of said graphical representation.

27. The graphical user interface of claim 22 wherein alteration of said scale of said object to zoom in is accomplished by said third user selected interaction to decrease a dimension of said graphical representation.

28. A method of processing data on a computer comprising the steps of:
    (a) selecting an active region from a data area on said computer;
    (b) representing said active region as a graphic on a display;
    (c) altering a portion of said data area included in said active region by altering a dimension of said graphic between a plurality of limits by interaction of a cursor and said graphic; and
    (d) altering said data included in said active region to change a scale of an object visible on said display by interaction of said cursor with said graphic having said dimension approximately equal to a said limit.

29. The method of claim 28 wherein said data included in said active region is altered to minify said object by interaction of said cursor to increase a dimension of said graphic when said dimension is approximately equal to a maximum dimension.

30. The method of claim 28 wherein said data included in said active region is altered to magnify said object by interaction of said cursor to decrease a

-14-

dimension of said graphic when said dimension is approximately equal to a minimum dimension.

31.   The method of claim 28 further comprising the step of altering said data included in said active area to change a graphical position of said active region relative to said data area by interaction of said cursor and said graphic.

32.   The computer implemented graphical user interface of claim 28 wherein said computer on which said interface is implemented is a personal computer.

33.   The computer implemented graphical user interface of claim 28 wherein said computer on which said interface is implemented is a handheld electronic device.

34.   A method of processing data on a computer comprising the steps of:
        (a) selecting an active region from a data area on said computer;
        (b) representing said active region as a graphic on a display;
        (c) altering a portion of said data area included in said active region by
             altering a dimension of said graphic by a first user selected interaction of a
             cursor and said graphic; and
        (d) altering said data included in said active region to change a scale of an
             object visible on said display by a second user selected interaction of said
             cursor with said graphic.

35.   The method of claim 34 further comprising the step of altering said data included in said active area to change a graphical position of said active region relative to said data area by a third user selected interaction of said cursor and said graphic.

36. The method of claim 34 wherein said data included in said active region is altered to minify said object by said second user selected interaction of said cursor to increase a dimension of said graphic.

37. The method of claim 34 wherein said data included in said active region is altered to magnify said object by said second user selected interaction of said cursor to decrease a dimension of said graphic.

38. The method of claim 34 further comprising the step of altering said data included in said active area to change a graphical position of said active region relative to said data area by a third user selected interaction of said cursor and said graphic.

39. The computer implemented graphical user interface of claim 34 wherein said computer on which said interface is implemented is a personal computer.

40. The computer implemented graphical user interface of claim 34 wherein said computer on which said interface is implemented is a handheld electronic device.

41. The graphical user interface of claim 40 wherein said first user selected interaction, said second user selected interaction and said third user selected interaction are accomplished with a mouse.

ABSTRACT OF THE DISCLOSURE

5   A computer implemented graphical user interface and data processing method is provided that facilitates manipulation of objects on a display by directly manipulating a graphic representation of an active area of data. The user can select an active region of a larger information area, reposition it relative to the information area, resize it and zoom in or out by directly manipulating the graphic 10   representation of the active area.
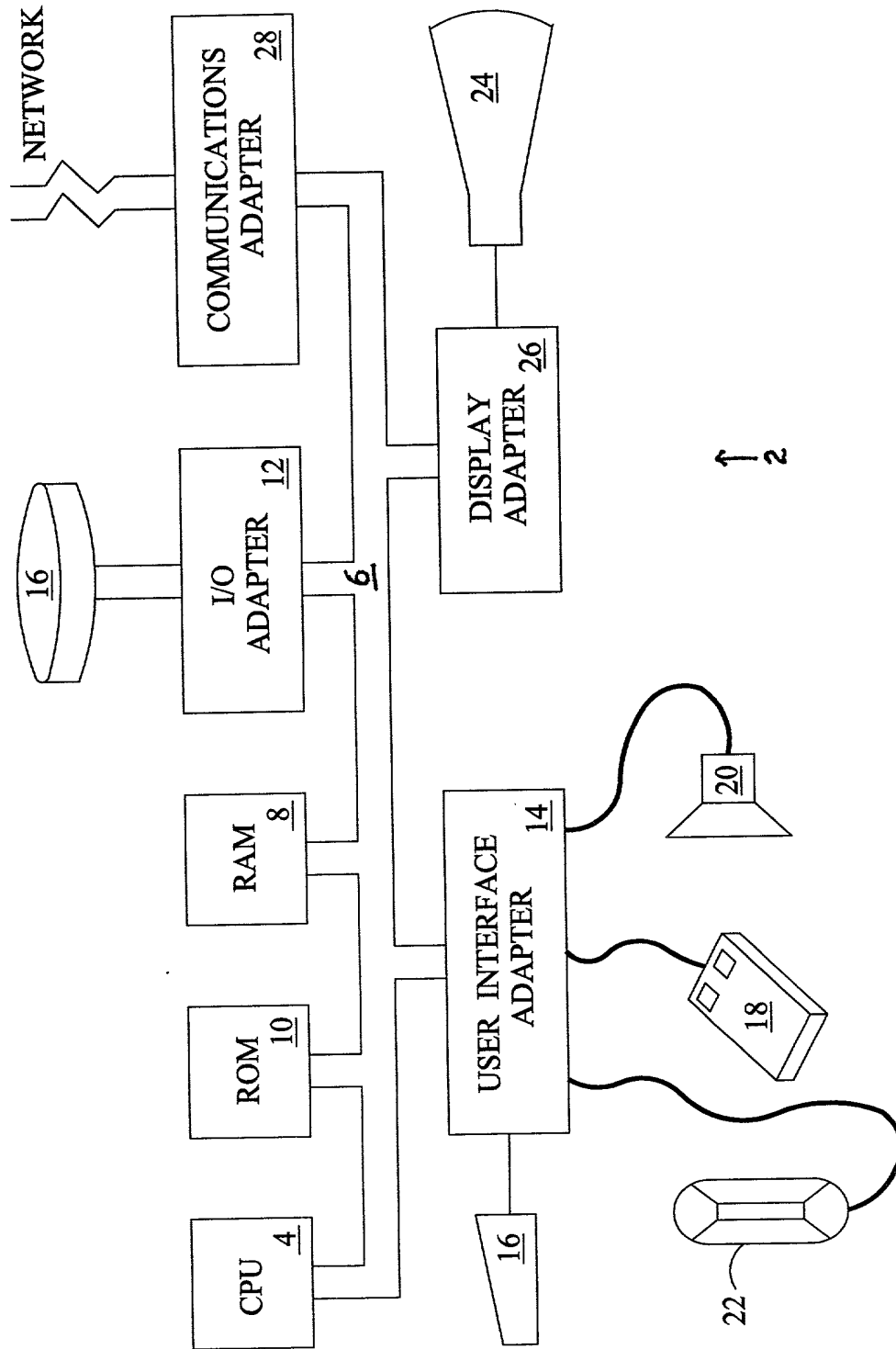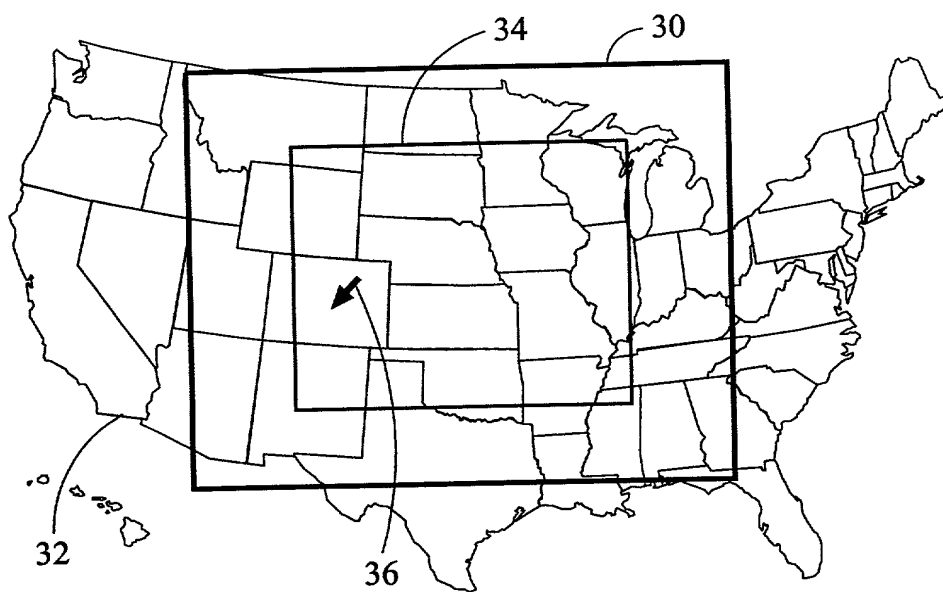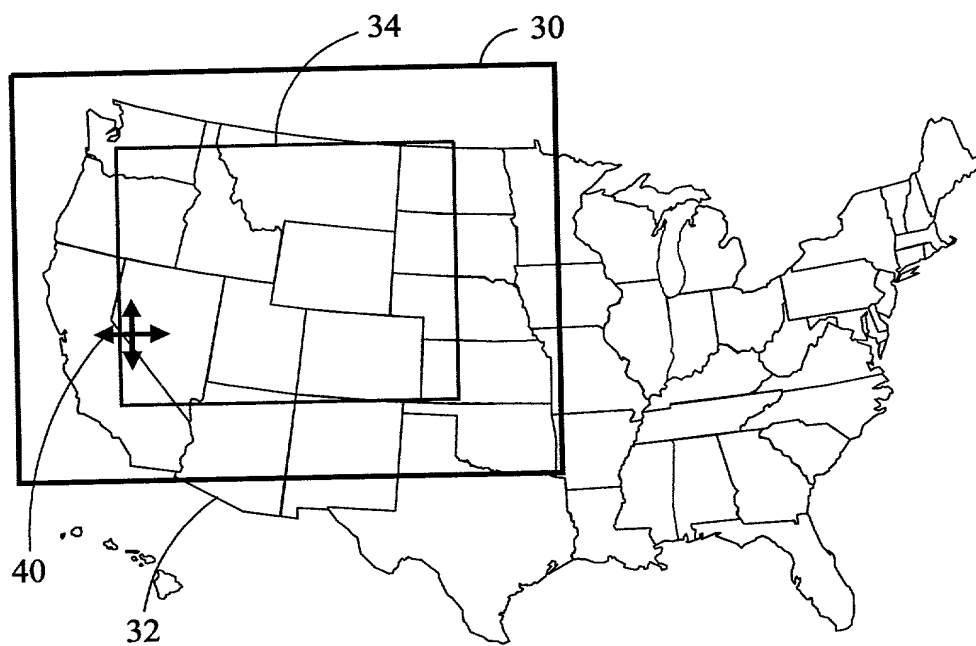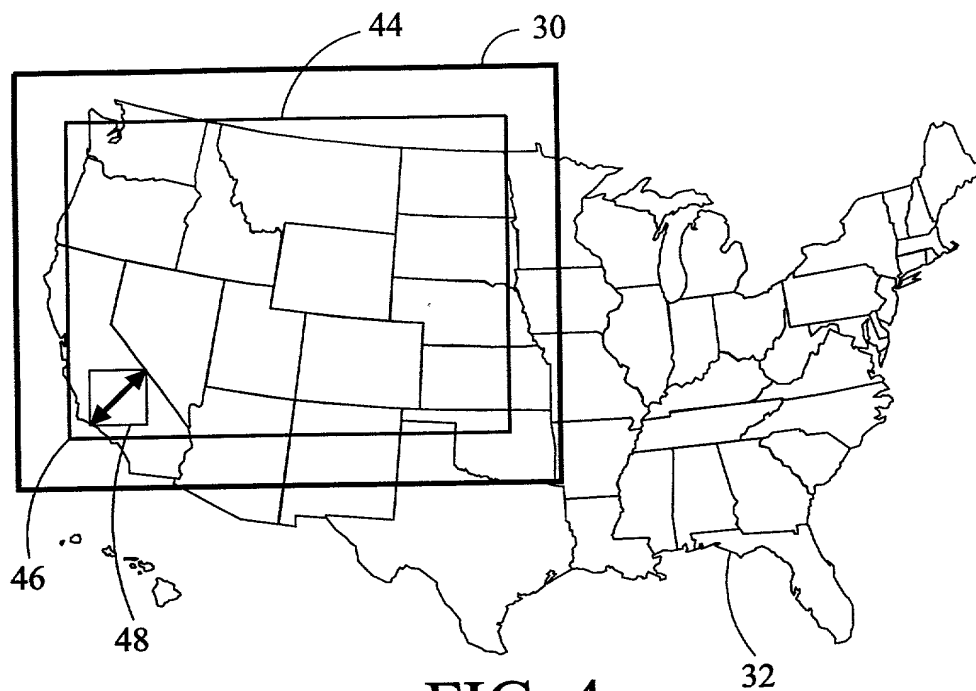
FIG. 1

FIG. 2

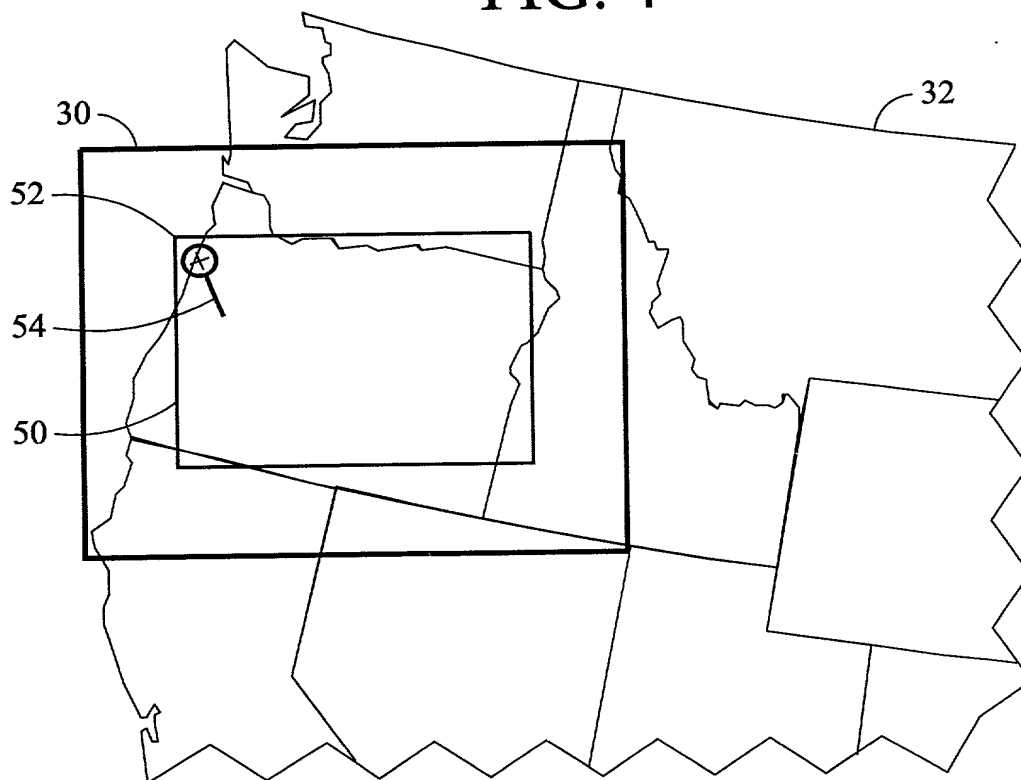FIG. 3

44 30

46

48

32

FIG. 4

30 32

52

54

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FIG. 5

DECLARATION AND POWER OF ATTORNEY

As the below named inventors, we hereby declare that:

Our residence, post office address and citizenship are as stated below next to our names.

We believe that we are the original inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INTERACTIVE VIRTUAL AREA BROWSER

the specification of which

    [X]   is attached hereto.
           was filed on _____ as
    [ ]   Application Serial No. _____
           and was amended on _____.
                        (if applicable)

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above.

We acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56.

We hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

                                          Priority
                                        Claimed

_____ _____ _____ [ ] Yes [ ] No
  (Number)   (Country)   (Day/Month/Year Filed)

_____ _____ _____ [ ] Yes [ ] No
  (Number)   (Country)   (Day/Month/Year Filed)

We hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below.

_____   _____
(Application Serial No.)   (Filing Date)

We hereby claim the benefit under Title 35, United States Code, § 120, of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States

application in the manner provided by the first paragraph of Title 35, United States Code, § 112, we acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Ser. No.)	(Filing Date)	(Status) (patented, pending, abandoned)

We hereby appoint Jacob E. Vilhauer, Jr., Reg. No. 24,885, Charles D. McClung, Reg. No. 26,568, Dennis E. Stenzel, Reg. No. 28,763, Donald B. Haslett, Reg. No. 28,855, William O. Geny, Reg. No. 27,444, J. Peter Staples, Reg. No. 30,690, Kevin L. Russell, Reg. No. 38,292, Bruce W. DeKock, Reg. No. 40,585, Nancy J. Moriarty, Reg. No. 40,733, Timothy E. Siegel, Reg. No. 37,442 and Timothy A. Long, Reg. No. 28,876, all of the firm of Chernoff, Vilhauer, McClung & Stenzel, LLP, 600 Benj. Franklin Plaza, One S.W. Columbia, Portland, Oregon 97258, telephone number 503-227-5631, my attorneys, jointly and individually, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: **8 OcTOBER 1999**
Full name of sole inventor
Residence
Citizenship
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